

REMARKS

Claims 1-6, 11-28, 38, 39, 46 and 58-103 are all the claims pending in the application.

Claims 5, 15 and 66-71 have been withdrawn from consideration by the Examiner. Claims 72-103 have been added as new claims. Claims 74-103 correspond to previously cancelled claims 7-10, 29-37, 40-45 and 47-57.

I. Objection to the Specification

The Examiner objects to the specification for not providing proper antecedent basis for the claimed subject matter. Specifically, the Examiner alleges that the limitation of claim 46 is not disclosed in the specification. Applicant submits that the limitation of claim 46 is at least disclosed on page 22, lines 9-18 of the specification. Accordingly, Applicant requests that the objection to the specification be reconsidered and withdrawn.

II. Objection to the Drawings

The Examiner objects to the drawings under 37 C.F.R. § 1.83(a) for failing to show the limitations of claim 46. As explained above, this feature is explained on page 22, lines 9-18 of the specification and at least shown in Figure 12. Accordingly, Applicant requests that the objection to the drawings be reconsidered and withdrawn.

III. Claim Objections

Claims 22 and 46 stand objected to for lacking proper antecedent basis. Regarding claim 22, the Examiner states that “an periphery” should be changed to --a periphery--. Claim 22 has been amended to make such change.

Regarding claim 46, the Examiner states that “said capillary” lacks proper antecedent basis. However, claim 46 depends from claim 19. Claim 19 recites “said ink storage chamber communicates with an ambient air via a capillary formed in said container.” (Emphasis added). Accordingly, Applicant submits that claim 46 has proper antecedent basis. Accordingly, Applicant requests that the objection of claims 22 and 46 be reconsidered and withdrawn.

IV. Allowable Subject Matter

Claims 16, 58 and 59 stand allowed. Claims 38 and 39 contain allowable subject matter and would be allowable if rewritten in independent form to include all of the limitations of the base claim and any intervening claims. Applicant requests that the Examiner hold rewriting claims 38 and 39 in abeyance until the rejection of the parent claims has been reconsidered.

V. Claim Rejections

Claims 1-4, 6, 11-14, 17-28, 60, 61, 63 and 65 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Pawlowski et al. (U.S. Patent No. 5,777,647). Claims 1, 2, 12, 19-25, 60, 61 and 65 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Iida (U.S. Patent No. 6,000,788). Claim 46 stands rejected under 35 U.S.C. § 103(a) as obvious over Pawlowski et al. in view of Baker et al. (U.S. Patent No. 5,025,271). Finally, claims 62 and 64 stand rejected under 35 U.S.C. § 103(a) as obvious over Iida in view of Obermaier (U.S. Patent No. 3,354,902). Reconsideration and removal of these rejections are respectfully requested on the basis of the present amendment to the claims and the following remarks.

A. Rejections in view of Pawlowski

Claims 1-4, 6, 11-14, 17-28, 60, 61, 63 and 65 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Pawlowski et al. (U.S. Patent No. 5,777,647). To be an “anticipation” rejection under 35 U.S.C. § 102, the reference must teach every element and limitation of the Applicant’s claims. Rejections under 35 U.S.C. § 102 are proper only when the claimed subject matter is identically disclosed or described in the prior art. Thus the reference must clearly and unequivocally disclose every element and limitation of the claimed invention.

Applicant submits that Pawlowski fails to teach or disclose that the “valve seat obstructs the flow of ink and only allows ink to flow around the valve seat when the movable membrane is disengaged with the valve seat.” The Examiner asserts that Pawlowski discloses all of the elements of the claimed invention. Specifically, the Examiner asserts that Pawlowski discloses an ink supply device (202) being a differential pressure valve including a coil spring (515), a valve seat (517/519), and a movable membrane (505). Further, the Examiner asserts that functional limitations are considered inherent. Applicant submits the valve seat of Pawlowski is attached to the plunger mechanism 511 and that ink is not obstructed by the valve seat 517. Also, ink does not flow around the valve seat when the movable membrane is disengaged, in fact, the movable membrane does not even engage the valve seat in Pawlowski. However, the valve seat of the claimed invention obstructs the flow of ink and only when the movable membrane is disengaged with the valve seat is ink permitted to flow around the valve seat. Therefore, since Pawlowski fails to teach the valve seat of the claimed invention, Pawlowski fails to teach all of the claimed limitations as required by 35 U.S.C. § 102(a).

Claim 46 stands rejected under 35 U.S.C. § 103(a) as obvious over Pawlowski et al in view of Baker et al. (U.S. Patent No. 5,025,271). Since claim 46 depends from claim 12 (via claim 19). As discussed above, Pawlowski fails to teach or suggest all of the limitations of claim 12. Since Baker fails to cure the deficient teachings of Pawlowski respect to claim 12, Applicant submits that claim 46 is patentable at least by virtue of its dependency from claim 12. Therefore, Applicant respectfully requests that the rejection of claim 46 under 35 U.S.C. § 103(a) be reconsidered and withdrawn.

B. Rejections in view of Iida

Claims 1, 2, 12, 19-25, 60, 61 and 65 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Iida (U.S. Patent No. 6,000,788). Iida fails to teach or disclose a coil spring that is located opposite the valve seat with respect to the movable membrane as recited in independent claims 1 and 12. As clearly shown in Fig. 5 of Iida, the coil spring 21 is adjacent to the alleged valve seat 20. In other words, the valve seat 20 is disposed between the coil spring and the movable membrane 3. Thus, the coil spring is not located opposite the valve seat 20 with respect to the movable membrane 3. Therefore, since Iida fails to teach the coil spring configuration of the claimed invention, Iida fails to teach all of the claimed limitations as required by 35 U.S.C. § 102(a).

Claims 62 and 64 stand rejected under 35 U.S.C. § 103(a) as obvious over Iida in view of Obermaier (U.S. Patent No. 3,354,902). Obermaier is not directed to an ink cartridge and is silent with respect to the feature of that the ink cartridge must maintain a negative pressure. Nevertheless, since claims 62 and 64 depend from claim 12. As discussed above, Iida fails to

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teach or suggest all of the limitations of claim 12. Since Obermaier fails to cure the deficient teachings of Iida with respect to claim 12, Applicant submits that claims 62 and 64 are patentable at least by virtue of their dependency from claim 12. Therefore, Applicant respectfully requests that the rejection of claims 62 and 64 under 35 U.S.C. § 103(a) be reconsidered and withdrawn.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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APPENDIX

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

The claims are amended as follows:

1. (Twice Amended) An ink-jet recording device comprising:

a body;

a carriage movable relative to the body,

an ink-jet recording head provided to said carriage, and

an ink supply device mounted to said carriage for supplying ink to said recording head,

wherein:

said ink supply device is constructed as a differential pressure valve including a coil spring, a valve seat and a movable membrane normally contacted elastically with said valve seat by said coil spring;

wherein said valve seat obstructs the flow of ink and only allows ink to flow around the valve seat when the movable membrane is disengaged with the valve seat; and

wherein said coil spring is located opposite the valve seat with respect to the movable membrane.

12. (Twice Amended) An ink supply unit, comprising:

a differential pressure valve including a coil spring and a movable membrane normally contacted elastically with a valve seat by said coil spring, is accommodated in a container having an ink storage chamber and an ink supply port;

wherein the ink storage chamber communicates with the ink supply port; and

wherein the ink supply port is adapted to be connected to an ink-jet recording head;

wherein said valve seat obstructs the flow of ink and only allows ink to flow around the valve seat when the movable membrane is disengaged with the valve seat; and

wherein said coil spring is located opposite the valve seat with respect to the movable membrane.

22. (Amended) An ink supply unit according to Claim 12, wherein:

said movable membrane includes a movable part made of soft material, and a fixing part made of hard material and fixed to ~~an~~ a periphery of said movable part.

46. (Twice Amended) The ink supply unit according to Claim 1219, wherein:

a film member having both gas permeability and ink repellent properties is interposed between said capillary and said ink storage chamber.

Claims 72-103 are added as new claims.